Maxwell indeed suggested ("Electricity," vol. i. p. 56) that a layer of extra dense air equivalent to an extra layer of ordinary air about 1/200th inch thick surrounding solids would account for Sir Wm. Thomson's remarkable and puzzling results; and this is a dimension of the same order of magnitude as the thickness of the dust-free coat on bodies at an ordinary temperature. I by no means intend to imply that the dust-free layer is not composed of extra dense air—I have no evidence on the subject—but the dust-freeness may *possibly* account for its greater strength without the hypothesis of extra density.

The dust-freeness itself remains to be accounted for. Numberless experiments suggest themselves. We have not yet tried other gases even, though that is an obvious thing to do.

It struck me some time ago that the motes in a sunbeam would be convenient weightless bodies for many purposes, to exhibit statical lines of force for instance, but the particles of the smoke we have hitherto used have not been sufficiently elongated for this purpose. But I anticipate that the examination of all kinds of electrical phenomena in the strongest possible light, instead of in the dark as usual, may lead to various fresh observations.

The rapidity with which an electrified point clears the box of smoke is so noticeable as to suggest several practical ideas. It is somewhat surprising considering the perfection to which electrostatic machines have been brought that they have not yet received any practical application. The electrical clearing of the air of smoke-rooms, or of tunnels, is perhaps not an impracticable notion. The close relationship between fogs, epidemics, &c., and the suspension of solid particles in the air, suggests the use of electrical means for sanitation, and for weather improvement. It has long been known that lightning clears the air, and though ozone may be credited with a portion of the beneficial influence, I fancy the sudden driving away of all solid particles and nuclei must have a great deal to do with it.

If the germs driven out of the air are condensed on the earth's surface, a partial explanation is suggested of the way in which "thunder turns milk sour," a fact which has always puzzled me, and which appears to be well established.

I cannot help thinking that the human race will ultimately acquire some means of artificially affecting the weather in a less injurious manner than that which they have hitherto attempted with only too great success, namely, the manufacture of solid nuclei in prodigious numbers for moisture to condense round, and of oily matter to cover the surface of such moisture with, in order to prevent its evaporation. As soon as this artificial pollution of the atmosphere has been decisively checked, it will be time to consider whether it may not be possible to keep off even natural mists and rain when they are not wanted, and to assume some sort of control over the weather at critical seasons, instead of halting between superstitious appeals to Providence on the one hand, and a helpless resignation to fate on the other, which are our attitudes at present.

Meanwhile is it not possible that a periodic optical examination of the atmosphere by a strong beam of light might convey useful meteorological information?

OLIVER J. LODGE

University College, Liverpool, July 11

Antihelios

BY means of a current of air passed through an ice closet or a closet otherwise reduced in temperature the air of living-rooms might be gauged to any temperature, but say 60° or 70° F. if we pleased. If the air were driven through a preliminary water chamber arranged on the principle of the hubble-bubble pipe, mosquitoes and other flying pests would be excluded absolutely. Imagine the comfort of sitting down to a meal whereat one's food should not be hidden by flying vermin, of reposing in a cool chamber wherein these intruders should be excluded absolutely. When I lay ill of fever in West Africa the atmosphere about me felt simply like the blast from a furnace. What an element of recovery, of possible health and physical wellbeing, would it not prove in hospitals when poor fellows languishing in disease should be surrounded by pure, cool, insectless air instead of air at a hundred degrees or even higher. People—some people—say doctors do not feel, but I say that a doctor's heart is rent with anguish when he enters a chamber wherein the air is pestilential, where the sores of wounded men are maggot-infested and the men themselves are eaten up with vermin. All this cooler air would prevent or tend to prevent. The festive hall, the school-room, the living-room, the barrack, the church, would all experience, the occupants regarded, commensurate relief. It would be just as available in ships as on shore. The Red Sea transit and the blazing oceans of the tropics need no longer be things of terror. In steamships a small percentage of steam power would suffice for driving the cool air current. Wind, water, hand, and steam power could also be rendered available. The vans employed to supply blast-furnaces should suffice for anything, but there is the winnowing van which horse or mule, indeed any animal, could work. Even the simple circular bellows would keep an apartment cool. In towns or in a contonment, a stationary engine with air-ducts leading to the different dwellings would satisfactorily replace apparatus adjusted to each separate house.

HENRY MACCORMAC

Belfast, July 21

Disease of Potatoes

THE paragraph in NATURE, vol. xxviii. p. 281, regarding a "hitherto unknown" disease of potatoes near Stavanger, appears to be identical in every way with the disease which destroyed the "champion" potatoes in the West of Ireland in August, 1880, described and illustrated by me in the *Gardener's Chronicle* for August 28, 1880. The bodies described by Herr Anda, as about the size of a small black bean, are *Sclerotia*, or masses of highly condensed mycelium, and they have nothing to do with the potato fungus proper, *Peronospora infestans*.

It is a remarkable fact that neither horticulturists or botanists had ever noticed these large black *Sclerotia* in potatoes in Britain before 1880, and as far as I know no one has ever seen them since. There was a prodigious and destructive growth in 1880, and several botanists as well as myself tried to make the *Sclerotia* germinate, but a failure resulted in every instance. It appears that Herr Anda has seen the *Sclerotia* germinating; it is therefore to be regretted that he has not identified, or got some one else to identify, the perfect fungus.

WORTHINGTON G. SMITH

"Waking Impressions"

I HAVE before me now a record, written the following morning, of a waking impression of the same order as that told by Mrs. Maclear in NATURE, vol. xxviii. p. 270, but which I think shows more clearly the sort of duplexity of brain action that one sometimes detects in dreams.

I awoke with a clear vision of a pamphlet I was holding. The subject was cookery, and about four-fifths of the cover was occupied by an engraving of pots and pans, trussed chickens, and other culinary matters. Below this, in one line, printed in capitals all of the same size, was the title which I was reading at the moment of awaking, "FOOD, OR THE ASTROLOGY OF EVERY DAY."

My first waking impression was of the utter irrelevance of the alternative title; but on looking at it with closed eyes more carefully I saw that the paper in one place had been rubbed, and that a little bit was curled up, leaving a wider space between "the" and "astrology" than between the other words. The conviction then came to me that a letter was missing, and that the word in full must have been "Gastrology." This of course made sense of the title; but it is curious that one's waking intelligence should be needed to interpret the inventions of one's dreams.

E. HUBBARD

1, Ladbroke Terrace, July 21

A Remarkable Form of Cloud

WHILE preparing to observe the moon on Sunday, the 22nd inst., at 10h. 20m. p.m., my attention was attracted to a peculiar patch of grayish white light a few degrees from the moon, which upon closer examination I found extended right across the heavens, from the north-north-west to the south-south-east point of the horizon, passing through the zenith. It had a breadth of about 2°, and was sharply defined on both sides, more especially the northern, excepting near the zenith, where it was broken up into three or four detached cloudlike masses. All other parts of the sky were perfectly free from clouds, so that this one appeared like a gigantic arch spanning the heavens; so much so that a person to whom I pointed it out compared it to a rainbow, which it very much resembled in form. At 10h. 45m. it was reduced about one-half in width and had shifted 20° from the zenith

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towards the north-east, though it still extended from the south-south-east to north-north-west. By 10h. 55m. it had broken up into four irregular streaks of clouds of various breadths and parallel to each other, the only portion of the original arch being a narrow streak extending from the south-east to the meridian, where it faded away. This was the "beginning of the end," for the remnant of the original arch and the other clouds in a short time disappeared below the eastern horizon, leaving the sky beautifully clear.

I should much like to know whether any other observer was fortunate enough to observe this remarkable cloud; I say remarkable because, though I have been a pretty constant observer of the heavens for the last eight years, I have never noticed anything of the kind before. B. J. Hopkins

10, Malvern Road, Dalston, E., July 24

Triple Rainbow

In the afternoon about 5.30 a week or ten days ago, I noticed a rainbow of the ordinary type, and quite complete, which lasted about five minutes; the portion to the right hand then faded away, as well as the upper and lower portions apparently of that part of the bow visible to the left hand; but the middle portion of the remainder of the bow divided apparently into three parts, each one complete in their prismatic colouring, and yet none of them parallel to each other.

There was a slight difference in size, possibly in favour of that portion belonging to the original bow, and which constituted the outermost of the three arcs.

This portion of the phenomenon lasted for about five minutes, and was also similarly observed by a gentleman walking with me at the time.

Unfortunately some large trees prevented us from seeing the lower portion of the three arcs, where presumably they should have been united into one. R. P. Greg

Coles, Buntingford, Herts, July 23

A Remarkable Meteor

In regard to the meteor seen by your correspondent P. F. D. at Hendon on the 6th inst., at 8.53 p.m., in a clear sky and broad daylight, I have the following entry in my diary under the same date: "Meteor going south-east through Cassiopeia at seven minutes to nine; daylight." It was indeed a remarkable meteor. The sun had set about half an hour. I happened at the time to be looking intently at that part of the north-east sky in which it appeared. What struck me most was the brilliant sparkling silvery light given off by the fragments into which it divided just before disappearing. I estimated that it would strike the horizon about the south-east point. B. G. Jenkins

Dulwich, July 21

The Function of the Sound-Post in the Violin

May I be permitted to correct a careless expression in my letter appearing in your last issue on this subject? The passage I refer to is this: "If the bridge [of the violin] were placed near one end of the instrument, the case would be different," *i.e.* the tone would be louder. I ought rather to have said: "If the bridge were placed nearer to a firm support, the case would be different." The statement is perfectly true as it stands with a sound-board which is equally thin all over, or where the edges are thicker than the middle. It is not true with a construction like that of the violin, where the edges are extremely thin and flexible. A sonorous wave always transmits itself best from the stronger part of the surface to the weaker.

R. Howson

Sand

Mr. Melvin is at fault in assuming that my paper on sand was "an attempt to distinguish by the aid of the microscope whether sand had been formed by the action of wind or of surf." Its primary object was to show that chalk-flint had scarcely any place in its formation; but few particles of it appearing even from the midst of rolled shingle whether that be ancient or modern. Other problems of course may be determined or solutions suggested by an extensive examination of ancient deposits, compared with those now forming. I have shown that quartz is he great staple of "sand." The size of its particles, whether rounded by attrition or flat, rough, and angular, must be accounted for by observing the conditions under which it exists in modern formations. A large series is being examined by me, and a record will be made of the result. As yet I have no theory whatever. I simply record *facts*. J. G. Waller

68, Bolsover Street, W., July 18

ON MOUNTING AND PHOTOGRAPHING MICROSCOPIC OBJECTS

We have received from Mr. E. Wheeler of Tollington Road, Holloway, a collection of mounted microscopic objects, comprising anatomical, botanical, entomological, and other preparations, and we have much pleasure in testifying to the general excellence of the work. One of the objects—a vertical section of the human small intestine—deserves special mention. It shows the glandular cells especially well. The nerves and ganglia of Auerbach's plexus can be seen, and interspersed among the epithelial cells of the villi and Lieberkuhnian follicles are numerous goblet cells.

Space will not allow more than a bare mention of the other objects, including a large transverse section of the stem of Lepidodendron from coal, transverse sections of the stems of spruce fir (*Abies excelsa*) and mare's tail (*Hippuris vulgaris*), the former showing resin canals and sections of bordered pits in the wood cells; Spirogyra in various stages of conjugation, from the first modification of the conjugating cells to the maturation of the zygospores; various Diatomaceæ, including the rare *Coscinodiscus excavata*; injected preparations of intestine of cat and toe of white mouse, and various entomological objects. They are all well prepared, and represent a stock which Mr. Wheeler informs us amounts to fifty thousand objects.

Although the legitimate use of professionally-mounted objects such as these may tend in no small degree to the diffusion of scientific knowledge, the microscopist who employs his instrument for no better purpose than the examination of bought slides will derive little benefit from the pursuit. He should be able to prepare objects for himself, and although there is abundance of accessible information on every detail of the art, it is believed that there is yet a useful work to be accomplished. By showing the facility with which this can be done without resort to the multiplicity of processes usually considered necessary, we shall endeavour in this article to show how any possessor of a microscope may make for himself preparations which, though they may not equal by many degrees the productions of the best professional mounters, yet have a far higher educational value, as their preparation will afford information which could not be otherwise acquired.

The necessary materials and instruments are few and inexpensive. For the support of the objects a supply of the usual 3″ × 1″ glass slides with ground edges, and of thin cover glasses (preferably circular) of various sizes should always be at hand. These when bought will be dirty, and it saves time to clean them all at one operation.

For securing the cover to the slide various cements are used, but of these two only need be mentioned, as they will be sufficient for all ordinary purposes. Gold size is undoubtedly the most reliable cement, but it takes days or sometimes even weeks to harden. It is, however, exceedingly tenacious and tough, and does not become brittle with age. It should always be used in cases where objects are mounted dry or in liquid, but when viscid media are employed, the medium helps to secure the cover, and there is no danger of leakage. Under these circumstances the use of asphalte varnish is recommended. The Brunswick black of the oilshops is a common form of this varnish, but is not so good as the preparation supplied by the opticians. When the varnish is to be used, it must be warmed by standing it in a cup

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